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SANITATION IN THE PHILIPPINES

WITH SPECIAL REFERENCE TO ITS EFFECT UPON OTHER
TROPICAL COUNTRIES

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It is now practically ten years since the health organization under the American civil régime in the Philippines was put in operation, and it may not be amiss to review some of the results that have been accomplished during that decade. It is proper to state, however, that prior to the formation of civil government, a board of health was organized under Army General Orders No. 15, under the authority of which army officers did good work and made an excellent beginning in reducing the ravages of the diseases which they found so abundantly present on every hand. This early work was largely concerned with protecting the health of the troops, and mostly confined to the city of Manila. When the civil health régime began, in addition to the deplorable sanitary conditions resulting from centuries of neglect, it found itself confronted with a severe outbreak of plague in Manila and in a number of the provinces. To add further to its labors, it had scarcely opened its offices before one of the severest epidemics of cholera that has been known in modern times had its beginning.

Forty thousand persons were dying annually from small-pox, while the number of deaths from beriberi in jails and

other public institutions was frightful. With the exception of the water system in the city of Manila, there was not a reservoir, pipe-line, or artesian well for the 7,200,000 people of the entire archipelago, and even the water for the city of Manila was known to be grossly polluted. The dead were buried in a most haphazard manner, it being a not infrequent experience to find as many as four or five interred in a grave. The bones of those who had died but a few months before were often ruthlessly cast out to bleach in the sun, in order to make room for a more recent death. The city of Manila, which had a population of over 200,000, had no sewer system, and foul human discharges found their way directly into the esteros, or canals, of which there are some twenty-three miles. The water in these was frequently stirred up by the lighters and other craft which are used so extensively in Manila for transporting cargo, with the result that nauseous gases were constantly being liberated.

There was no food law, and the vilest class of food products was shipped into the country without let or hindrance. Amoebic, and other forms of dysentery soon affected the troops and others who had come to the Philippines to aid in governmental work. Subsequent experience has shown that these same diseases were responsible literally for thousands of deaths annually among the Filipinos. There was no hospital in the entire islands which had modern surgical equipment, and persons died on every hand of disease which could have been easily relieved by very simple medical procedures. It was not uncommon to find many persons horribly deformed by the scars which resulted from injuries or ulcers that could have been easily cured if skilled attention and facilities had been available at the time when they had their beginning. There were some 300,000 wild people living in a primitive state, among whom no attempt had been made to furnish medical relief. The prisons throughout the islands were indescribably filthy and neglected.

In the days prior to American control, the maritime quarantine was conducted upon a basis of graft rather than upon merit, with the inevitable result that an outbreak of any of the dangerous, communicable diseases, like plague,

cholera or smallpox, in the nearby foreign countries, meant the early introduction of the disease into the Philippines. There was no proper inspection of animals before slaughter, and suitable slaughter-houses, where this work could have been done, were conspicuous by their absence. More than 5000 lepers were at large throughout the Philippine Islands. A few hundred were taken care of as objects of charity, but there was no attempt made to segregate lepers with the view of avoiding the danger of infection to others, or of lessening the ravages of this disease. Malaria prevailed in hundreds of towns in the Philippines, without quinine being available to combat it. It was no infrequent experience to find imitation quinine pills being sold at fabulous prices in the stricken districts, and the poor populace had no one to whom to apply with the hope of receiving any relief from this most intolerable condition. Sections of Manila, having a population of from 5000 to 25,000, were built up with houses so closely crowded together that there was no room for streets or alleys, and egress from these sections had, in many instances, to be made by the residents crawling under one-another's houses. Manila is located on a tidal flat, and formerly, at high tide, about half of the city was inundated. As this flat land consisted of soft, oozy mud, the conditions can be better imagined than described.

There was no governmental provision for the insane, and it was no uncommon sight to see these unfortunates tied to a stake, under a house or in a yard, with a dog-chain, and it often happened that during fires, which are so frequent in towns built of nipa, these unfortunates were burned because no one thought to release them. Foods and perishable provisions were sold under most filthy conditions, the common practice being to sell them from the ground, so that the dust and dirt of everyone who came to see was soon intimately mixed with the food that was on sale. There were no restrictions enforced in the construction of buildings, with the usual result so frequently seen in Oriental countries—small, dark interiors, with practically no light and air, abounded everywhere. It was a frequent occur-

rence to find small rooms, often no larger than 8 by 10 by 8 feet, in which from six to eight persons were sleeping. Street cleaning was most indifferently carried on, with the result that large quantities of garbage and other filth accumulated in back yards and upon the streets. Tuberculosis was responsible each year for perhaps another 50,000 deaths throughout the archipelago. No effort whatsoever was made to teach the people how to deal with this scourge.

MAGNITUDE OF THE PROBLEM

The task which confronted the American sanitarian seemed indeed impossible of accomplishment. With a population that was fully satisfied with the conditions as they were, and not disposed to have any portion of the taxes which were being collected from them used for sanitary purposes, and with the determination to resist any change in their personal habits and the conditions which surrounded them, it must be admitted that the prospects for bringing about a better state of things were not very alluring, especially as the task had to be accomplished with an amount allotted to the board of health, derived from revenues collected in the Philippines. In addition, the foreign medical men of the East, good-naturedly, and sometimes not good-naturedly, ridiculed the efforts to bring about a better state of affairs. It was pointed out that in foreign colonies it was customary to take such steps as would safeguard the health of the persons who came from Europe to govern or to do business, and that the wisest policy was to let the masses live as they would; that it was impossible to reform the Oriental, and that it was effort wasted that could be used more profitably in other directions. Observation of the work done by Europeans in Far Eastern cities showed that this practice was almost universally in force.

RESULTS OBTAINED

But the American sanitarian was not daunted by these obstacles, and set to work resolutely. His first large task was to combat the severe outbreak of cholera which has

already been mentioned. It was then learned that the passive resistance of the Oriental is a very much more subtle and difficult force to overcome than the active opposition which is so frequently encountered in the temperate zone.

On the whole, it may be said that the campaign waged against cholera in the beginning was not as successful as could have been hoped for, but the experience gained paved the way for attacking future outbreaks with considerably more success. It was soon learned that there was nothing to be gained by using actual force. The opposition which was engendered caused far more difficulty than the good which was accomplished in an individual case in which it was used.

The early efforts to combat plague resulted in similar lack of success. With this disease not only Filipinos but the Chinese had to be dealt with, and the efforts to bring the Celestials to the ways of twentieth century hygiene would oftentimes have been ludicrous had the results not been so fatal. The lack of success of these efforts soon made it apparent that, before much could be accomplished in the islands, a set of laws would have to be prepared in which considerable deference should be given to local prejudices; that frequently a compromise would have to be accepted in order to gain the adherence of Filipinos who had large influence with their people. In other words, it became apparent that the sanitary regeneration of the Philippine Islands had to be brought about, not in spite of the Filipino people, but with their assistance. One of the first steps was to organize some three hundred boards of health throughout the islands, with Filipinos in charge in the majority of instances. In many cases the officials who composed these boards were brought to Manila and given a course of instruction in modern sanitation and hygiene, and to their credit it must be said that after they began to learn the whys and wherefores of things, much coöperation and assistance was obtained from them. It was but natural that a people should resist measures which they, in their inmost hearts, believed were being enforced by the governing power for the express purpose of making them miserable, unhappy and uncomfortable.

able. As soon as the better class of Filipinos observed, however, that no cases of cholera occurred among the Americans who drank water that had been boiled and ate only food that had been cooked and was served hot, this simple plan had many imitators, and much of the success that was obtained in later cholera campaigns may be attributed to the measures which the Filipino people themselves invoked.

During the early years of the existence of the board of health, plans were made for the vaccination of the people of the entire archipelago. This was first attempted by permitting the local Filipino health authorities to take charge and vaccinate the persons in their immediate districts, but not much success followed these efforts. It was found that in most instances the health officer did not appreciate the necessity and importance of vaccinating every individual in a community. Often his friends or those whom he considered had political or other influence which they might use to his disadvantage, were permitted to go unvaccinated. The result was, that so long as soil remained for the implantation of smallpox contagion, the disease continued to exist. When it was demonstrated to the Filipinos that this plan would not work, partially with their assistance another plan was tried. It consisted in having an American physician, with some 20 or 30 vaccinators, begin at one border of a province and literally march across it, only going forward when all of those who were behind had been vaccinated. Upon the completion of the first work, the expected result became a reality. In provinces that before vaccination had from 2000 to 3000 deaths annually from smallpox there was not a single death or even a single case of this disease after its completion. The success of this plan was so overwhelming that the insistence for doing it by the former plan was largely withdrawn, with the result that all portions of the Philippine Islands to which it was possible to ship vaccine in a potent condition, have now been almost entirely freed of smallpox. In a province which has been vaccinated it is a unique sight to see anyone today who has any pits of smallpox received since the vaccination was completed. In the six provinces which immediately surround

Manila, where formerly there had been probably for centuries 6000 deaths annually from smallpox, there was not a single death from that disease in the year following the completion of the vaccination, nor have there been any deaths since that time among persons who were vaccinated in those provinces. This work is still going on, and the net result is, that there are now at least 30,000 less deaths annually than was the case before this work was begun.

Coincident with this work the island of Culion, which is roughly 20 by 10 miles, and, with the necessary deductions for indentations, has an area of about 150 square miles, was set aside for a leper colony. The property rights of such residents as were found on the island were purchased and the people removed to the nearby island of Busuanga. The construction of a modern town was begun, and when this had proceeded sufficiently far, the collection and transfer of lepers to Culion was commenced. By 1908 at least one collection of lepers had been made all over the archipelago, and in many provinces a number of collections had been made, but there were necessarily quite a number who escaped the early collections and went into hiding, and also a considerable number who were in the incubation period of the disease from an infection which they had probably received through their association with cases of leprosy, so that, up to the present time, cases still come to notice, and these, as soon as discovered, are isolated and, at frequent intervals during each year, are transferred to Culion. Although it is entirely too early to furnish data with regard to this matter, it is roughly estimated that there were formerly at least 1200 new cases of leprosy contracted each year, and it is believed that now, with the lessened opportunities for infection, this number has already been decreased one-half. If these estimates are correct, it means that at least 600 persons are being saved annually from contracting this most loathesome disease; that this number remain as useful members of society instead of being a burden upon the public during the remainder of their existence. The leper town of Culion, like towns in the United States, is constantly being improved and is assuming a more and more modern

aspect. Houses of reinforced concrete are being built. A modern water and sewer system have been installed. A commodious hospital with a capacity of 250 beds, where the acutely ill may be taken care of, has been provided, and there are constantly on duty the necessary doctors and nurses. The leper community has been made self-governing. No guards of any kind are employed. The people elect their own officials and govern themselves by laws which they make, so that, not only are the people of the Philippine Islands relieved of the danger and undesirability of having lepers among them in places where they are constantly liable to convey the disease to healthy persons, but, on the other hand, the leper himself is no longer made to feel that he is an outcast. He has a place which he can call his home, where he is welcome, and where he can indulge in most of those pursuits of human liberty which are held as necessary attributes to happiness.

In Manila a modern water system has been constructed at a cost of approximately \$2,000,000, for which the water is now obtained from an uninhabited water-shed. This improvement has already resulted in a reduction of approximately 800 deaths annually in Manila, from the gastrointestinal diseases. The quantity of water and the pressure has also been greatly increased, so that it is now available in all sections of the city, whereas, heretofore, it was limited to certain sections, and, unless storage tanks were placed on the roofs, water was not available above the first floor. At the cost of another \$2,000,000 a modern sewer system was provided. This is one of the most modern of its kind, and has been in very satisfactory operation for four years. The filthy latrine and cesspool are now rapidly giving way to the modern flush closet. Twenty-three miles of esteros have been cleaned of their accumulation of centuries, and, in most instances, are clean water courses and no longer canals for the reception of sewage. Hundreds of artesian wells have been bored throughout the islands, and work is under way for the installation of many hundreds of others. Wherever the water from an approved well has been exclusively used by a community, the death rate has often dropped

50 per 1000. In other words, in a town of, for instance, 3000 inhabitants, there are now 150 less deaths annually than occurred before pure drinking water was furnished.

The jails throughout the islands have been cleansed, and sanitary equipment installed. The loathesome skin diseases from which the prisoners suffered were cured, and the conditions have been made such that their contraction in the future is extremely unlikely.

Beriberi, which in former days caused frightful mortality in jails and other public institutions, and was responsible for 5000 deaths annually in the archipelago, is now being rapidly reduced owing to discoveries which were largely worked out in the Philippine Islands. It might also not be amiss to state, in passing, that it is estimated that there are at least 100,000 deaths from beriberi throughout the Orient each year, and through the efforts of the Far Eastern Association of Tropical Medicine, which had its origin and birth in Manila, the prospects are fair for united governmental action being taken with the view of greatly reducing the ravages of this disease, or perhaps, of stamping it out altogether.

The evidence is almost conclusive that beriberi in the Orient occurs mostly among persons whose staple article of diet is white rice, which means rice from which the outer portion, or cortical layer, has been removed. Numerous experiments have shown that the disease is due to the fact that an essential element, necessary to the proper nutrition of the human being, is lacking from rice from which the outer portion has been removed. When rice is used as a staple article of diet, there is no opportunity to obtain this lacking constituent from other foods. Europeans, for instance, seldom contract beriberi because they use a diversified diet. Exactly what this missing substance on the outside of the rice grain is, has not yet been definitely ascertained, but it has been repeatedly shown that if persons suffering from beriberi are given the outer portion of the rice grain, or, in other words, rice polishings, they soon recover from this disease unless they were hopelessly ill at the time treatment was begun.

Manila's streets are now swept daily, and it is the frequent comment of travellers that it is one of the cleanest cities of the world. Garbage is collected every night, so that there is no opportunity for the accumulation of filth of this kind, as was formerly the case. This condition does not apply to Manila alone, but to many of the towns of the provinces.

Rules for avoiding cholera have been put into such simple form that it has been possible to teach them in the schools throughout the islands, and the pupils are now able to repeat them like a catechism. This campaign has not only benefited the pupils who were directly taught the means whereby cholera may be avoided, but their elders have been appreciably influenced by the example which their children have set them. It is now of frequent occurrence that when cholera makes its appearance in a community, a request is immediately sent to the central government at Manila for the services of an expert who can advise the people of the stricken town as to the measures which should be invoked to bring the outbreak to a speedy close.

Plague has been completely extirpated, and no cases of this disease have occurred in the Philippines since April, 1906. Cholera has also been absent now for nearly a year, and even during the preceding year the number of cases was insignificant when compared with those which formerly occurred.

By making available better drinking water, and by active educational propaganda, the spread of amoebic dysentery has been greatly reduced.

Cemeteries, properly laid out, have now been provided throughout the length and breadth of the islands. All remains which are not cremated, are decently interred, one in a grave, 3 feet under the ground.

Streets and alleys have been cut through the congested districts of Manila, so that the houses can now be approached by a street or alley. The improvement in the health of the people where this has been done can scarcely be estimated. In the event of the appearance of a dangerous communicable disease, it is possible to reach it promptly and remove cases

to a modern "dangerous-communicable-disease" hospital and thereby greatly reduce the danger of the spread of such diseases. Garbage carts now enter these sections daily, and in consequence filth no longer accumulates. A noteworthy incident in connection with the improved living conditions in these areas, was the pride which the inhabitants themselves took in their new surroundings.

A modern insane hospital has been constructed in Manila, where there is room for at least all of the cases that are urgently in need of care. A large general hospital, with a capacity of 350 beds, has likewise been constructed in Manila. This is unquestionably the most modern and best equipped hospital in the eastern hemisphere, and will compare favorably with the most modern hospitals in Europe and America. Already patients are being treated at the rate of 80,000 a year in the out-patient clinic, which means that thousands upon thousands are receiving relief and are freed from pain, among whom only agony and distress existed heretofore.

A nursing school, with over 300 young Filipino men and women students, is in successful operation, and has already graduated two classes, the members of which have passed civil service examinations and received grades which compare favorably with those received by American nurses. A medical school, with modern laboratories and the latest equipment for teaching by instructors who are specialists in their respective branches, was established six years ago, and has already graduated doctors from its five years course. The entrance requirements, course of study, and practical hospital training are higher than the average in the United States. A modern hospital has been constructed in the very heart and center of the wild man's country, and with the assistance of the ministrations of the doctor and the nurse these people are being rapidly brought from a head-hunting, savage state to the paths of civilization, and are rapidly becoming useful, productive people.

A campaign against tuberculosis has been organized; camps for the treatment of incipient cases have been constructed at various places; many dispensaries have been opened; a hospital for incipient cases provided at Baguio,

and a hospital for chronic cases at Manila. A campaign of education has been waged on every hand; the aid of moving picture films has been utilized; in short, everything is being done that is customary in enlightened communities of Europe and America.

INFLUENCE ON OTHER COUNTRIES

The influence which this work has had upon other colonizing powers in the Orient it is almost impossible to estimate at this time. During the past four years, representative sanitarians and others, from Japan, China, Hongkong, Indo-China, the Straits Settlements, Java, India, the Federated Malay States, Australia, Ceylon, Siam and other countries, have come to the Philippine Islands for the purpose of studying the methods by which the results in the Philippines were brought about, with the view of having their governments pass upon the question as to whether similar measures should not be introduced in their own countries. Many of these countries would, perhaps, resent having it stated that many of their sanitary reforms, which they have brought about in the past few years, were due to the example which had been set in the Philippines. Nevertheless, it can scarcely be gainsaid that the work of the United States in the Philippines must have been a very important factor in stimulating other countries to attempt similar measures. The success which has already been had by the introduction of sanitary methods has had a great influence in paving the way to the introduction of additional reforms. The recently organized Chinese Republic is making a noble effort to bring about the introduction of similar sanitary measures in China. With the view of having intelligent criticism passed upon that which they have done, a sanitary official from the Philippines was invited to come to China in order to suggest and advise them further with regard to their plans.

Many of the countries of the Orient no doubt feel themselves compelled to join the van of modern sanitation because public opinion which is being slowly crystallized

throughout the world demands it more and more, as the results which America has accomplished in the Philippines become more widely known. Before the lepers of the Philippine Islands were segregated, no country of the entire Orient, with the possible exception of Australia, had made any plans looking toward segregating the lepers found among the native peoples, whereas, today, at least three countries are arranging for this step, and contemplate accomplishing it in accordance with the plans and model which were used in the Philippine Islands.

At a conference which was held this year in Hongkong, agreements have been reached among the Oriental countries to impose similar quarantine restrictions. The desire to protect themselves was largely due to the success which has followed the quarantine measures which were enforced in the Philippine Islands. It is generally conceded in other Oriental countries that the medical literature produced in the Philippine Islands is more voluminous, and has a greater scientific value than that of all the other countries combined. These writings have also had an important influence in moulding opinion with regard to medical and sanitary matters of other portions of the Orient.

The successful results in stamping out mosquitoes, achieved in Panama and in many sections of the Philippines have been a great stimulus to other countries in carrying out similar work. No doubt the day is not far distant when the number of deaths from diseases which are conveyed by mosquitoes will be greatly reduced in many of the lands of the Orient, and this day is being greatly hastened by the example furnished by America.

Instead of viewing the medical men of the Philippines with suspicion, their medical brethren in other countries now meet them in full fraternity, and the effect that this has had in promoting a better understanding, and the influence for progress can scarcely be estimated. The indirect effect of this has been excellent, because, before America's advent into the Orient, there was no fraternizing between the countries. Each remained within its own little sphere, and in many instances there was much wasted labor and

effort expended in solving problems that had already been successfully solved in other countries. By the free interchange of ideas which now takes place, the knowledge gained in one country is available in a very short time in others.

The fact that the traveller can now go in safety to sections in the tropics which meant almost sure death heretofore, and that commercial enterprises can now be profitably carried on where disease among laborers made it impracticable formerly, is largely due to the efforts of the American sanitarian in Panama, Cuba, Porto Rico, and the Philippines.